

SAFETY DATA SHEET



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1-CHLOROBUTANE

SDS No. M0041

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: 1-Chlorobutane

Synonyms: Butylchloride; n-Butyl Chloride; n-Propylcarbonyl Chloride

Recommended Use: This product is recommended for laboratory and manufacturing use only. It is not recommended for drug, food or household use.

2. HAZARDS IDENTIFICATION



Classification:

Flammable Liquids: GHS Category 2

Skin Irritation: GHS Category 3

Eye Irritation: GHS Category 2A

Label Elements

Signal Word: DANGER!

Hazard Statements:

- H225 – Highly flammable liquid and vapor.
- H302 – Harmful if swallowed
- H316 – Causes mild skin irritation.
- H320 – Causes eye irritation.
- H332 – Harmful if inhaled.
- H336 – May cause drowsiness and dizziness.

Precautionary Statements:

- P210 – Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
- P280 – Wear protective gloves/protective clothing/eye protection/face protection.
- P303+P361+P353 – If on skin or hair: Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.

Emergency Overview

Affects central nervous system. Causes irritation to eyes, skin, respiratory tract, and digestive tract. Highly flammable liquid and vapor. Target Organs: Central nervous system.

Clear focus. Consistent results. Complete confidence.

HMIS Rating:

Health – 1 Flammability – 3 Physical Hazard – 0 PPE – User supplied

NOTE: HMIS ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. These ratings are based on the inherent properties of this chemical under expected conditions of normal use and are not intended to be used in emergency situations. PPE is determined by the user based on their needs and conditions.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS No</u>	<u>Percent</u>	<u>Hazardous</u>
1-Chlorobutane	109-69-3	>99%	Yes

4. FIRST-AID MEASURES

Inhalation: If inhaled, remove to fresh air. If breathing is labored or with coughing, give 100% supplemental oxygen. If not breathing, begin artificial respiration. Get medical aid.

Ingestion: If victim is conscious and alert, rinse mouth, and give large quantities of water to drink. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention.

Eye Contact: Check for and remove contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Notes to Physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Flammability: Highly flammable liquid and vapor. (GHS Category 2)

Auto-ignition Temperature: 240° C (464° F)

Flash Point: -6° C (21° F)

Flammable Limits: Lower Limit – 1.8 vol %, Upper Limit – 10.1 vol %

Products of Combustion: May decompose into highly toxic and irritating gases (hydrogen chloride, carbon monoxide and carbon dioxide) under fire conditions.

Specific Fire Hazards: As in any fire, always wear self-contained breathing apparatus in pressure-demand (MSA/NIOSH approved or equivalent), and full protective gear. Use water spray to keep fire exposed containers cool. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas. Liquid floats on water and may travel to a source of ignition and spread fire. Will be easily ignited by heat, sparks, and flame.

Specific Explosion Hazards: Vapors may form an explosive mixture with air. Containers may explode if exposed to fire.

Fire Fighting Media: For small fires, use dry chemical, carbon dioxide, water spray, or alcohol resistant foam. Water may be ineffective and may spread the fire. If water is the only media available, use in flooding amounts. For large fires, use water spray, foam, or alcohol resistant foam. Do not use straight streams of water. Keep containers cool with flooding quantities of water until well after fire is out.

National Fire Protective Association: Health - 1, Flammability - 3, Reactivity - 0

NOTE: NFPA ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. They are for use by emergency personnel to address the hazards that are presented by short term, acute exposure to this product under fire, spill, or similar emergencies. Ratings involve data and interpretations that may vary from company to company.

6. ACCIDENTAL RELEASE MEASURES

Absorb spilled liquid with sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. Provide ventilation to the affected area. Avoid run-off into storm sewers and ditches that lead to waterways. Approach the spill from upwind

and pick up absorbed material and place it in a suitable container. Always use proper personal protective equipment as described in section 8.

7. HANDLING AND STORAGE

Precautions: Always use proper personal protective equipment as described in section 8. Wash thoroughly after handling. Avoid contact with eyes, skin, and clothing. Remove contaminated clothing and wash before reuse. Keep container tightly closed. Avoid ingestion and inhalation.

Storage: Keep away from oxidizing materials. Keep in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Protect from moisture.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Facilities storing or using the material should be equipped with eyewash station and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal Protection: Wear protective chemical goggles or appropriate eye protection. Use appropriate protective gloves and protective clothing to prevent skin exposure. A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever possible. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Exposure Limits: None established

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Clear, colorless liquid.

Odor: Unpleasant odor

Odor Threshold: 3.34 mg/m³ to 6.33 mg/m³

Molecular Formula: CH₃(CH₂)₃Cl

Molecular Weight: 92.57

Auto-ignition Temperature: 240° C (464° F)

Flash Point: -6° C (21° F)

Flammable Limits: Lower Limit – 1.8 vol %, Upper Limit – 10.1 vol %

pH: Not available.

Boiling Point: 77-78° C

Freezing/Melting Point: -123° C

Decomposition Temperature: Not available

Specific Gravity: 0.8860 g/cm³

Vapor Density (Air=1): 3.19

Vapor Pressure: 81 mm Hg @ 20° C.

Viscosity: 0.45 mpa @ 20° C

Solubility: 0.5 g/L @ 20° C

10. STABILITY AND REACTIVITY

Stability: Stable under normal temperatures and pressure.

Conditions to Avoid: Incompatible materials, ignition sources, excess heat.

Incompatibility With Various Substances: Strong oxidizing agents, alkali metals, alkalis.

Hazardous Decomposition Products: Hydrogen chloride, carbon monoxide, carbon dioxide.

Hazardous Polymerization: May occur.

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, skin absorption, skin contact

Acute Exposure Hazards:

INHALATION HAZARD: High concentrations may cause central nervous system effects characterized by headache, dizziness, drowsiness, nausea, unconsciousness, and coma. May cause respiratory tract irritation. Vapors may cause dizziness or suffocation.

INGESTION HAZARD: May cause irritation of the gastrointestinal tract. May affect the central nervous system.

SKIN CONTACT HAZARD: Causes skin irritation.

EYE CONTACT HAZARD: Causes eye irritation.

Chronic Exposure Hazards: No information found.

Animal Toxicity:

Oral, mouse: LD50 = 5600 mg/kg;

Inhalation, rat: LC50 = >7.74 mg/l /4 hr /aerosol

Oral, rat: LD50 = 2200 mg/kg;

Carcinogenicity: Not listed by ACGIH, IARC, NTP, or CA Prop 65

Epidemiology: No information available.

Teratogenicity: No Observed Adverse Effect Level for teratogenesis: 300 mg/kg, method OECD TG 422.

Reproductive Effects: No Observed Adverse Effect Level of parents: 300 mg/kg, method OECD TG 422.

Mutagenicity: Animal studies show no indication of mutagenicity.

Neurotoxicity: No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Fish: Cyprinus carpio, LC50 = 258.6 mg/l / 48 hr / method OECD TG 203

Fish: Brachydanio rerio, LC50 = 75.6 mg/l / 96 hr / method OECD TG 203

Flea: Daphnia magna: EC50 = 452 mg/l / 48 hr / directive 84/449/EEC, C.2

Flea: Daphnia magna: NOEC = 5.6 mg/l / 21 days / method OECD TG 211

Flea: Daphnia magna: EC50 = 16 mg/l / 21 days / method OECD TG 211

Algae: Scenedesmus subspicatus: EC50 = >450 mg/l / 72 hr / directive 88/302/EEC, C.3

Algae: Scenedesmus subspicatus: NOEC = 90 mg/l / 72 hr / directive 88/302/EEC, C.3

Bacteria: EC50 Community Sewage Sludge = >1000 mg/l / 3 hr / OECD TG 209

Environmental Fate: Based on low boiling and melting points, this chemical is expected to rapidly volatilize into the atmosphere. Not readily biodegradable (47.2%: BODIS test). Bioaccumulation factor = 7.6 – 21 (Cyprinus carpio, 42 days, 0.5 mg/l, method OECD 305) Mobility = logKOC 2.5, method OECD TG 121.

13. DISPOSAL CONSIDERATIONS

Material that cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Processing, use or contamination of this product may change the waste management options. Waste generators must decide if discarded material is a hazardous waste. State and local disposal regulations may differ from federal disposal definitions found in 40 CFR 261.3. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. TRANSPORT INFORMATION

US DOT, IATA, IMO

Proper Shipping Name: Chlorobutanes

Hazard Class: 3

UN Number: UN1127

Packing Group: II

Canada TDG

Additional Information: Flashpoint -6C

15. REGULATORY INFORMATION

US Federal Regulations:

TSCA: CAS# 109-69-3 is listed on the TSCA Inventory.

Health and Safety Reporting List: CAS# 109-69-3 is not listed.

Chemical Test Rules: CAS# 109-69-3 is not listed.

Section 12b: CAS# 109-69-3 is not listed.

TSCA Significant New Use Rule: Does not have an SNUR under TSCA.

CERCLA Hazardous Substances: CAS# 109-69-3 Does not have an RQ

SARA Section 302: Does not have a TPQ

SARA Codes: CAS# 109-69-3 – immediate, fire

Section 313: Chlorobutane (CAS# 109-69-3) is not subject to SARA Title III reporting requirements.

Clean Air Act: CAS# 109-69-3 is not a hazardous air pollutant (HAP). It is not a Class 1 Ozone Depleter. It is not a Class 2 Ozone Depleter.

Clean Water Act: CAS# 109-69-3 is not a Hazardous Substance. It is not a Priority Pollutant. It is not a Toxic Pollutant.

OSHA: Not considered highly hazardous by OSHA.

US State Regulations:

CAS# 109-69-3 is on the following state right-to-know lists: New Jersey, Pennsylvania, and Massachusetts

California No Significant Risk Level: Not listed.

Canada:

DSL/NDSL: CAS# 109-69-3 is listed on Canada's DSL list.

WHMIS: Not available.

Ingredient Disclosure List: Not available.

DSCL (EEC):

Hazard Symbols: Xi, F

Risk Phrases: R11 – Highly flammable; R36/38 – Irritating to eyes and skin.

Safety Phrases: S9: Keep container in a well ventilated place; S16 – Keep away from source of ignition – No Smoking; S29 – Do not empty into drains.

WGK (Water Danger/protection): CAS# 109-69-3: 2

16. OTHER INFORMATION

Originally Prepared: 1/1/2006

Last Revised: 1/28/2014 – Updated hazard statements in Section 2. Updated HMIS values in Section 3 and NFPA values in Section 5. Updated auto ignition temperature in Sections 5 and 9.

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